Laurel Bed Lake
Fisheries Management Report
2004

Laurel Bed Lake is a 330-acre impoundment located in the Clinch Mountain Wildlife Management area in Russell County. It is the largest Department-owned lake west of the Blue Ridge. The lake has a maximum depth of about 40 feet and an average depth of 15 feet. The mountain top setting (3600 feet elevation) and the unique mixed hardwood forest surrounding the lake provide a setting with unparalleled beauty.

During the 1970's and 1980's Laurel Bed provided a productive and popular brook trout fishery. During the early 1990's, however, low pH (acidic) water and other factors have severely limited brook trout survival and growth. The lake suffered from low pH because there is very little limestone in the watershed to buffer acid precipitation. Most fish need water with a pH from 6.0 to 9.0 in order to survive and prosper. The pH of rain and snow in the lake's vicinity is about 5.0. Without anything to buffer the low pH precipitation, the lake's water also had a pH of about 5.0. Another factor that complicated fisheries management at Laurel Bed Lake was the unauthorized stocking of rock bass in the early 1980's. Rock bass can survive and reproduce in low pH water, so they soon became overabundant (relative abundance = 266) and stunted at a small size (four to five inches). Stocked brook trout no longer grew well, because insects were scarce due to the low pH water and because rock bass competed with brook trout for the limited food.

In 1996 the lake was drained to allow structural repairs. This offered biologists an opportunity to reclaim the brook trout fishery. Rock bass were removed from the lake during the draining process, and when the lake re-filled in 1997 limestone dust was added to improve the lake's pH. Fingerling brook trout were stocked. Although considerable effort was expended to remove rock bass, they remained in the lake. Because biologists were concerned that the rock bass would again overpopulate the lake, smallmouth bass were stocked with the hope that they might feed on the rockbass and keep the population at a manageable level.

Laurel Bed Lake is currently managed for brook trout, smallmouth bass and rock bass. Routine fisheries management activities include fish population sampling, water quality sampling, fish stocking and water quality improvement (liming). The lake's fish populations are sampled each year. Biologists use an electrofishing boat to collect smallmouth and rockbass in the spring and use gillnets to collect brook trout in the fall. Water samples are collected periodically to insure that the lake's pH remains above 6.0. Fingerling brook trout (four to six inches) are stocked each fall. Smallmouth bass are stocked as needed to maintain the population.

The lake was limed in 1997, 1998, 1999, 2001, and 2003 to keep pH levels in the desirable range. Water samples are collected from the lake and sent to James Madison University for chemical analysis. Since the first direct lake liming in 1997, the pH of water in Laurel Bed Lake has remained above 6.0. Periodic liming will be necessary to keep the pH at a level that will support fish and aquatic insect life.

Stocked brook trout survived and grew well in Laurel Bed Lake from 1998 through 2000. Fall gillnet sampling provides an estimate of the number of brook trout that survive the lake's warm summer temperatures and are not caught and creeled by anglers. These "hold-over" brook trout are 12 to 14 inches and provide some excitement when anglers catch them the following year. The fall 1998 sample was the best with an index of 34. Anglers caught good numbers of these holdovers during the 1999 fishing season. Holdover was probably highest in 1998 because the lake had just refilled. Consequently, food was plentiful and angling pressure was low. The holdover index for 1999 was still high at 30. However, the 2000 estimate dropped to 6.7. Since 2001 holdover has been virtually non-existent, even though the brook trout stocking rate was increased in fall 2000 in an effort to increase the number of fish that holdover. It is unlikely that the changes in the brook trout population are related to water quality, because pH and other water quality parameters have remained stable. The poor holdover is probably a combination of limited summer habitat (low dissolved oxygen and warm water temperature), competition with rock bass and smallmouth and predation by smallmouth. Angler harvest does not appear to be affecting annual survival, based on the results of the 2001 angler survey and the poor survival observed in 2002 when the access road to the lake remained closed during most of the spring and summer months due to flood damage.

The majority of the trout caught by anglers are from the most recently stocked year class (stocked in the fall of the previous year). This means that the average size of brook trout caught by anglers is smaller than it was in the late 1990's. Seasonal trout fishing opportunities still exist from April through early June. Biologists are considering several options to increase the number of trout that holdover, thereby improving the size of trout available for anglers. Statewide fishing regulations apply for brook trout at Laurel Bed Lake. Anglers can keep six trout that are larger than the seven-inch minimum size.

Smallmouth bass have really prospered in Laurel Bed Lake since they were stocked as fingerlings in 1998 and 2000. Relative abundance (number of fish collected per hour of sampling has increased steadily since 1999 (Figure 1). The size structure of the smallmouth bass population has also improved, with about half of the adult smallmouth bass now exceeding 15 inches in total length (Figure 2). The largest smallmouth collected in the 2003 sample was just over 19 inches long. The 2003 spring electrofishing sample also yielded 27 smallmouths less than four inches in length. This collection suggests that smallmouth are now successfully reproducing in the lake. Because the smallmouth population was established to control rock bass, smallmouth are protected by catch-and-release regulations. No smallmouth bass can be kept by anglers at Laurel Bed Lake.

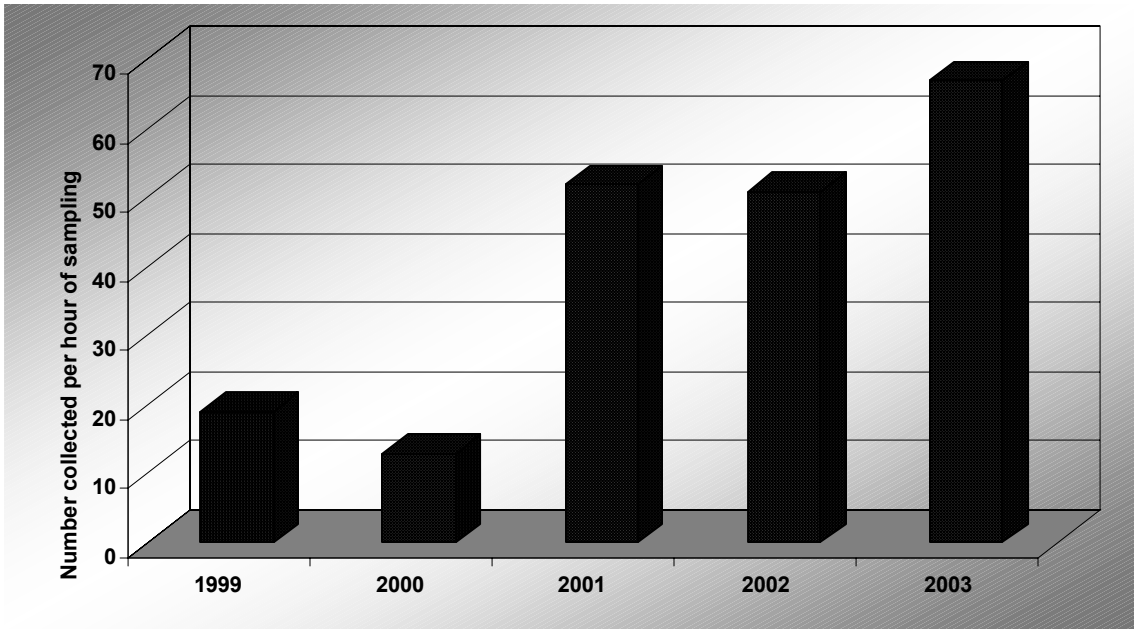

Figure 1. Number of smallmouth bass collected per hour of sampling in Laurel Bed Lake 1999-2003.

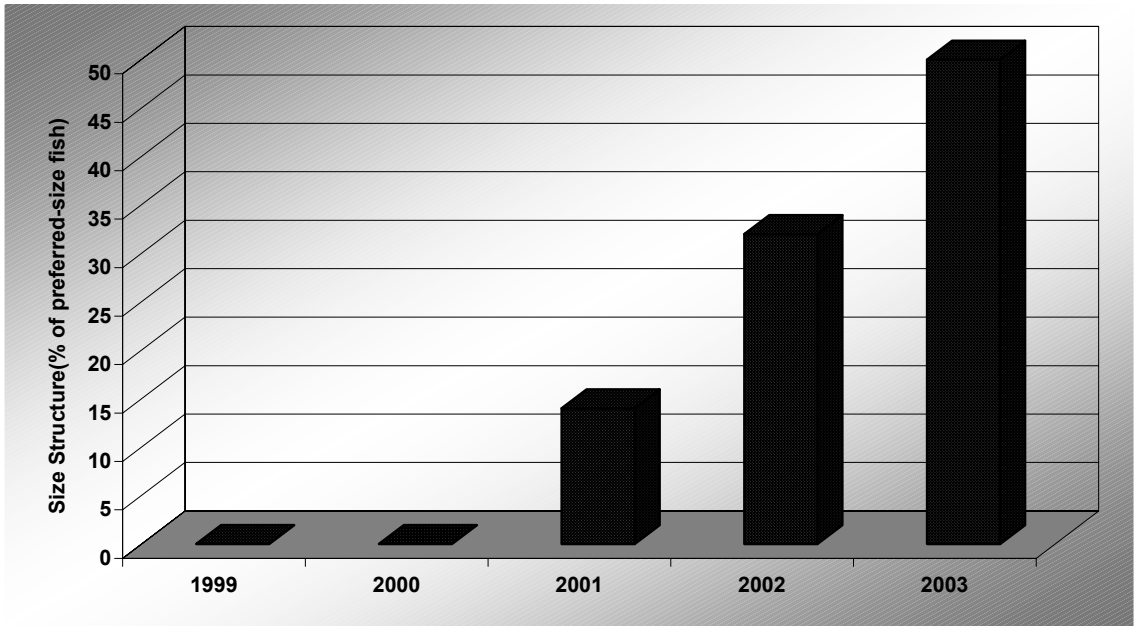

Figure 2. Size structure of smallmouth bass in Laurel Bed Lake 1999-2003 expressed as the percentage of preferred size fish collected in each sample. Preferred size is 14 inches for smallmouth bass.

The rock bass population in Laurel Bed Lake exploded from 1998 to 1999 and then stabilized at about 200 fish per hour of sampling through 2002 (Figure 3). The relative abundance of rock bass dropped to 95 fish per hour of sampling in 2003, suggesting that the smallmouths may be providing some measure of control on rock bass abundance. The average size of rock bass has increased from about four inches in 1999 to about six inches in 2000.

Several rock bass exceeding eight inches were collected in 2003. Hopefully the smallmouths will keep the rock bass population in check. A moderately abundant population of good-sized rock bass would be an acceptable addition to the Laurel Bed fishery. An overabundant population of stunted rock bass would provide only marginal fishing, and would represent a major source of competition for brook trout and young smallmouths. Anglers are encouraged to keep rock bass that they catch. There are no size or creel restrictions on rock bass in Laurel Bed Lake.

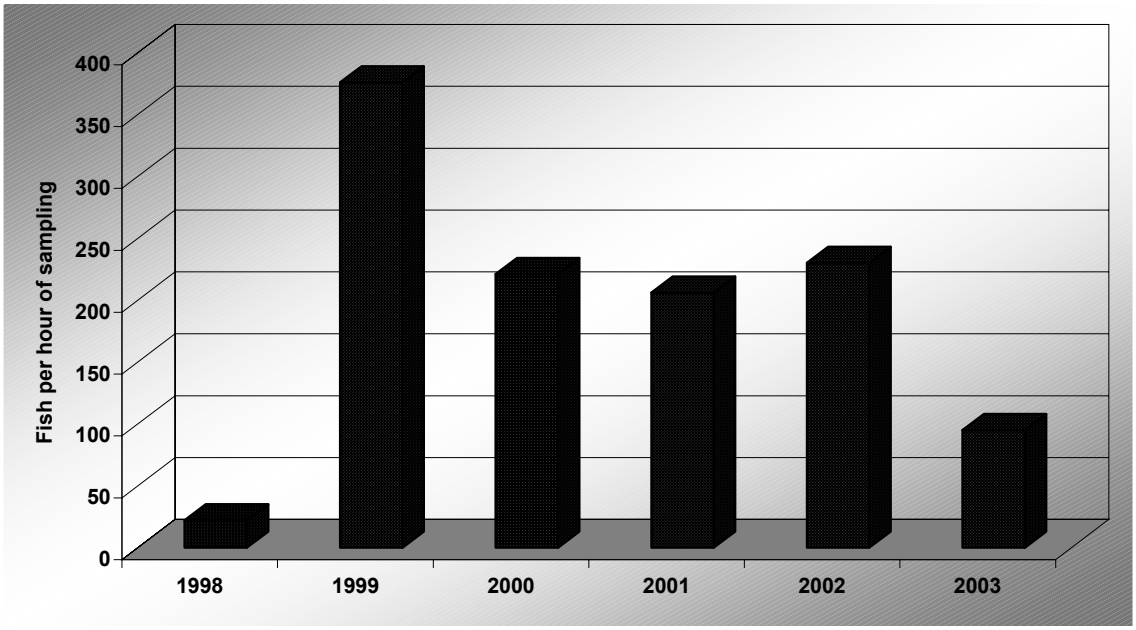

Figure 3. Number of rock bass collected per hour of electrofishing in Laurel Bed Lake from 1998 – 2003.

In conclusion, the Laurel Bed Lake fishery has changed considerably since the late 1990's. The brook trout fishery provided excellent angling opportunities for a period of about three years after the lake was drained. Since 2001, the lake has offered seasonal fishing (April, May and June) for trout less than 10 inches total length. Smallmouth bass established through stocking have added a new dimension to the fishery. Laurel Bed has both good numbers and good sizes of smallmouths. Rock bass are abundant, but the average size is less than preferred.

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